

**M.Sc. (MATHEMATICS WITH APPLICATIONS
IN COMPUTER SCIENCE)**

Term-End Examination

December, 2011

MMTE - 001 (P) : GRAPH THEORY

Time : 1½ hours

Maximum Marks :40

*Note : There are two questions in this paper totalling 30 marks.
Remaining 10 marks are for the Viva - voce. All the
programs are to be written in C- language.*

1. (a) Write a program that prints the incidence matrix of a graph, given a sequence of edges as input. **6+4=10**
- (b) Use the program to find the adjacency matrix for a graph with the following edge set:

$$\left\{ (1,2), (2,3), (4,5), (5,6), (6,1), (1,4), (2,5), (3,6) \right\}$$
 . Assume that the vertices are labelled as 1,2,3,4,5,6.

2. (a) Write a program to check whether a graph is bipartite or not. **10+10=20**
- (b) Use the program to check whether the graph given by the edge set in 1 (b) above is bipartite or not.